

Acid Base Review Worksheet

For the following acids and bases write the aqueous dissociation reactions, list either the conjugate acid or base species, and write the K_a or K_b expressions.

chlorous acid, hydrosulfuric acid, acetate ion, bicarbonate ion, iron (III) ion, acetic acid

Calculate the pH of the following solutions. (You will need to look up K_a or K_b values for weak species).

0.45 M HCl

2.6×10^{-5} M KOH

7.96×10^{-3} M nitrous acid

9.96×10^{-5} M aniline

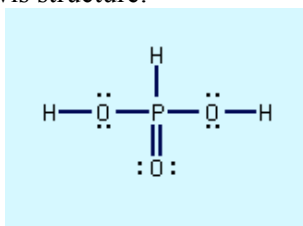
Calculate the percent ionization in 0.10 M HF and 0.010 M HF solutions.

The solubility of carbon dioxide in pure water at 25.0°C and 0.100 atm of pressure is 0.00037 M. When carbon dioxide dissolves in water an acid forms that is diprotic. Assuming all of the CO_2 in solution is making the acid, what will be the pH of a 0.00037 M solution of this acid? You will need to look up the K_a value for this acid.

Which of the following compounds will form a more acidic solution?

- i) sodium nitrate or ferric nitrate
- ii) potassium bromide or potassium hypobromate
- iii) tin (II) chloride or tin (IV) chloride

Phosphorous acid has the following Lewis structure:



- i) Explain why H_3PO_3 is diprotic and not triprotic.
- ii) A 25.0 mL sample of a solution of H_3PO_3 is titrated completely with 23.3 mL 0.102 M NaOH. What is the molarity of the H_3PO_3 solution?
- iii) This solution has a pH of 1.59. Calculate the percent ionization and K_{a1} for H_3PO_3 , assuming $K_{a1} \gg K_{a2}$.
- iv) How does the osmotic pressure of a 0.050 M HCl solution compare with that of a 0.050 M solution of H_3PO_3 ? Explain.